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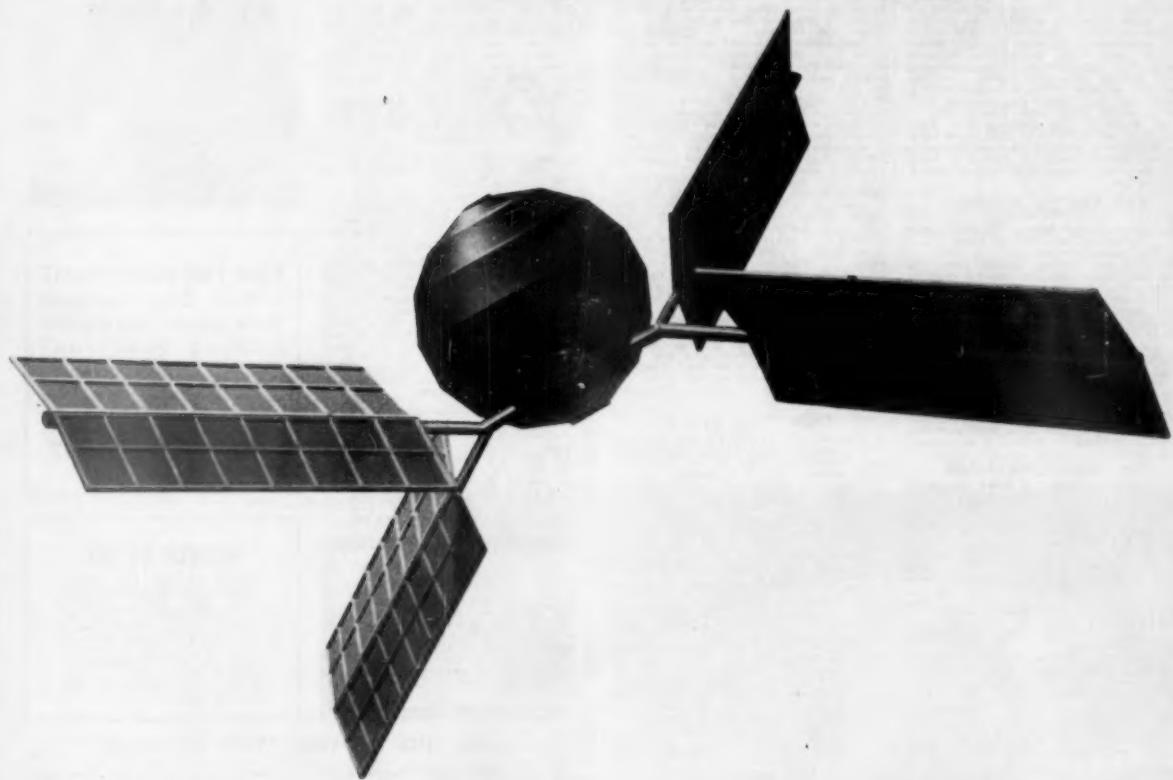
April 25, 1959

VOL. 75 NO. 17

PAGES 257-273

# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Power-Catching Paddles

See Page 261

A SCIENCE SERVICE PUBLICATION

**JUST IMPORTED  
FROM ITALY!**

# WORLD'S FIRST PERSONAL SIZE DESK ADDING MACHINE!

**Amazing Little Machine With Spinning Wheels and Trip Mechanism Adds Up To 9,999,999... Automatically!**

Not a flat, rent pocket adder—not a gadget—no bewildering instructions to follow. Here for the first time is a real desk-type adding machine that works on the same scientific principle as books on the market—“electric” but “out electrically!” It adds up bank statements, sales slips, inventories, expense accounts, super-market tapes, budgets, any adding jobs you have... within seconds of even \$200.00 electric adding machines! And this tiny amazing machine does it with just a flick of your finger on the clearing bar. Yes! Instantly all the wheels inside spin back to normal—7 zeros flash into the easy-to-read answer window—and it is ready for the next time saving, money saving adding job!

#### END MENTAL ADDING— FOREVER

No more adding figures in your head... scribbling numbers on paper... making mistakes that cost you time... and cost you money! Simply press the numbers down on this wonder-working little machine. The automatic trip wheel mechanism never makes a mistake. The total appears in the answer window in numbers in the answer window—INSTANTLY and AUTOMATICALLY! It keeps you within your budget... keeps you from overspending... protects you from the mistakes companies—even banks... often make... adds all the figures for your income tax back adds stock dividends... checks expense accounts... plus a thousand other adding chores... and pays for itself a hundred times over in the money you save.

#### AN ITALIAN INVENTION

An eminent inventor in Italy discovered the secret of the fool-proof, non-electric, automatic adding mechanism inside this machine. He had been trying for years to develop a real adding machine at a price for everyone... even in war-poor Europe. NOT another flat pocket adder that requires you to read long instructions before you can learn to operate it. Instead he wanted a real, desk type adding machine... that anyone could operate, even a child... that would be automatic... fool proof... and, above all, within the pocket-book of everyone. After many trials he found the answer after studying the spinning wheels inside electric computing machines. He came upon a way to let a person's hand supply the "power" to the wheels instead of electricity! Just imagine! His invented adding machine designed so that the gentlest touch makes the wheels inside turn! After one complete turn... the first

wheel automatically trips the next wheel just like \$200.00 electric machines! Nothing to remember. Nothing to do but press down the numbers to be added. Every wheel is automatic!

With the Italian machine famous for smaller automobiles and smaller motorcycles... started manufacturing this revolutionary new smaller, non-electric adding machine, offices and individuals throughout the world are buying it.

**WHAT ACCLAIM IT MET WITH!**

Wherever it added the longest columns of figures within seconds of the speed of electric machines. Giant companies gave it to secretaries... officers... salesmen... managers... entire companies improved.

Mistakes were cut down to nothing.

And from individuals came even more glowing stories. Instantly adding became a pleasure instead of an aggravating chore. Households became better... bills checked... mountains of figures added in no time... mistakes a thing of the past!

And when this remarkable adding machine was imported to America, the acclaim was even greater! For here it was what every home... every office... every store... every office has been waiting for. The perfect, small, easy to use, automatic, desk model adding machine in beautiful silver tone finish... finish, with big easy to read numbers and at a price so incredibly low that not a family or store or office can afford to be without it!

#### FREE TRIAL OFFER

How would you like to try this amazing new gleaming metal adding machine in your home, your office or your store entirely without risking a penny?

We want you to actually test it against automatic, electric adding machines. Compare it for speed, ease of use and accuracy. You must agree that it is almost as fast... and just as easy to use...

...you must agree that it will save you endless time, trouble, mistakes and money every week... or it won't last a day!

Just push the numbers down. See how the most gentle pressure of your hand turns the wheels inside. See how it adds up to 9,999,999 automatically. And see how just a flick of the clearing bar instantly clears the answer window. Then add the numbers again and the answer window all whirl back to seven zeros... instantly!

Put this amazing adding machine on your desk. See how instead of being too slow to add or too much of a hurry to be bothered with a complicated pocket adder... from now on you will check every calculation... check all your bills, statements, estimates, inven-

tories, budgets, reports... each in seconds... and never make costly mistakes again!

If you are in business, see how this precision adding machine will pay you back handsomely low price a hundred times over. Give one to every secretary,

every clerk, every person who ever adds. See how it cuts out trips to your bookkeeper, saves time, improves the efficiency of your entire office.

You must be convinced that ADDIPRESTO is one of the most valuable and useful inventions you ever used or it won't cost you a penny.

#### Supply Still Very Limited Mail Free Trial Coupon TODAY

Yes, it is impossible for you to appreciate the beauty, speed and efficiency of ADDIPRESTO until you actually see it and use it. Let us send it to you for one week's completely free trial.

The price of ADDIPRESTO is only \$14.95. Remember, it is a real adding machine with spinning wheels and automatic trip mechanism, the same type as \$200.00 electric computing machines! But ADDIPRESTO works from the pressure of your hand without electricity! It will save you its remarkable low cost many times over. Because you will USE it over and over again day after day. Don't confuse with flat, hard to use, complicated pocket adders.

However, the supply of genuine ADDIPRESTO machines is strictly limited. The factory in Europe cannot meet the demand. You must mail the free trial coupon below at once. ADDIPRESTO is not yet sold in stores. Act now and get yours by mail.

**ADDIPRESTO is shipped with  
protective plastic cover and  
GUARANTEE CERTIFICATE.**

#### GUARANTEE

This original ADDIPRESTO is precision-made from the finest quality materials, and will give you a lifetime of accurate, reliable performance. Unconditionally Guaranteed against defects in material or workmanship.

#### MAIL THIS NO-RISK TRIAL COUPON

## AGENTS! SALESmen!

**THE BIGGEST MONEY-  
MAKER YOU HAVE  
EVER KNOWN!**



ADDIPRESTO is the greatest goldmine ever seen! Since we have sold every the beautiful, gleaming metal adding machine with spinning wheels and automatic trip mechanism... the same type as \$200.00 electric computers. They make this open operation computation: add 1-1000 LONG COLUMN OF FIGURES in 30 SECONDS! After that there's no selling... no arguing. You can't keep people from buying! It's true. 8 out of 8 sales is nothing. Every home, every office, every store needs one. See how quickly you can get started to the biggest money you have ever known. There is no competition. There is no other machine like ADDIPRESTO.

#### MAIL COUPON NOW!

**OLIVER GARFIELD CO., INC., Dept. SL 49-D**  
**108 E. 16th St.**  
**New York 3, N. Y.**

Yes, I want to try ADDIPRESTO, the new Italian Office Type Adding Machine. I will use the machine for one week without risk to me. It must be everything you say it is or I may return it and you will refund my money at once, no questions asked, and I will have used the machine entirely free.

I enclose \$14.95 (check or money order) as payment in full. This way I save over \$1.00 in postage and handling charges. Same guarantee... same 7-day FREE trial.

You may bill me for \$14.95 (plus postage and handling) after my 7-day FREE trial period.

NAME.....

ADDRESS.....

CITY..... ZONE..... STATE.....

QUANTITY BUYERS SAVE! 2 Machines only \$13.95 each.  
3 to 5 Machines only \$12.95 each.

## NUTRITION

# Protein Needs Disputed

The role of protein in the diet is being seriously questioned by scientists who have presented evidence that this body-building substance can be harmful.

► WHETHER TOO much protein or too little protein is better for long life and disease resistance was the question discussed at a symposium on protein requirement and its relationship to man's health.

Protein deficiency may be the number one public health problem throughout the world, according to some researchers, but others reported evidence that persons getting a high protein diet may be eating dangerously.

Long-term studies with rats given high protein and high carbohydrate diets showed the diet was associated with reduced life expectancy and a higher incidence of organic and degenerative diseases. Rats kept on this high protein and high carbohydrate diet had an average life expectancy of 800 days compared with a normal life span of 1,000 days. (One year in a man's life is roughly equivalent to 30 years in a rat's.)

A further effect of the diet was reported by Dr. Morris H. Ross of the Biochemical Research Foundation, Newark, Del. There was a 40% incidence of spontaneous tumors among rats fed with this diet. With less protein and reduced total calory intake the spontaneous tumors were reduced to two percent, Dr. Ross reported at a meeting of the Federation of American Societies for Experimental Biology in Atlantic City.

Positive evidence that low protein and low carbohydrate diet was beneficial to the rats was seen in the physical condition of rats fed this diet. Not only did they live longer, Dr. Ross said, but they were "brighter, more alert and curious, they looked younger than their years and their coats were better—the fur was fine, like that of a baby rat."

Although it is impossible to say that what happens in the laboratory rat happens in man, the evidence from his studies seems to agree with what has already been observed in some persons' diets.

Another nutritional role of protein was questioned at the symposium. Scientists have observed that when a person is under stress, caused by disease, shock, etc., his stored protein is reduced. Commonly this person is treated by giving him added protein. This therapy may be harmful, or not essential. More study needs to be made of this problem, the scientist concluded.

Completing the picture of protein in the diet was a description of the disease kwashiorkor by Dr. N. S. Scrimshaw of the Institute of Nutrition of Central America and Panama, Guatemala.

This disease, which Dr. Scrimshaw reported as one caused by severe protein deficiency during the preschool years, probably accounts for one-third of the infant mortality in underdeveloped countries. There is also probably a relationship between the protein deficiency and increased incidence of infectious diseases, Dr. Scrimshaw said.

In the human infant, protein makes up about 12% of its body. This increases to about 18% to 20% within the first few years, an amount that is maintained throughout the individual's life. For this reason protein deficiency is particularly critical during a child's early years.

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## MEDICINE

## Tadpoles Point Way to Better Skin Grafts

► SMOOTH, NORMAL TISSUE may replace damaged skin without leaving scars if new knowledge about grafting can be applied to humans.

A grafting technique, now accomplished among young tadpoles, could eliminate scar tissue in wounds that are healing, Dr. W. H. Hildemann, University of California Medical School, reported.

The scar tissue would not be formed because grafted skin would protect regular tissue until it could grow normally, he explained at the annual meeting of the Federation of American Societies for Experimental Biology in Atlantic City.

Dr. Hildemann took skin transplants of tailbud tissue and successfully exchanged them between tadpoles up to 36 days of age. In contrast to human tissue, where

transplanted skin will grow successfully only between identical twins, the tadpole tissue grafts took even when several different donors were involved. The key to a possible solution of the grafting phenomenon may be the lymphatic system, the researcher speculated.

When a skin graft fails to take, it is because the individual reacts to the foreign tissue the same way he would react to a virus or to bacteria: he develops antibodies to the tissue. By learning at what stage this immune response capacity is developed, Dr. Hildemann said, we may be able to make successful grafts in mammals and humans.

Studies are now underway to see when the tadpole's lymphoid tissues, the spleen and the lymph "heart" that pumps lymph just as the heart pumps blood, develop and how they change between the 36th and 37th day.

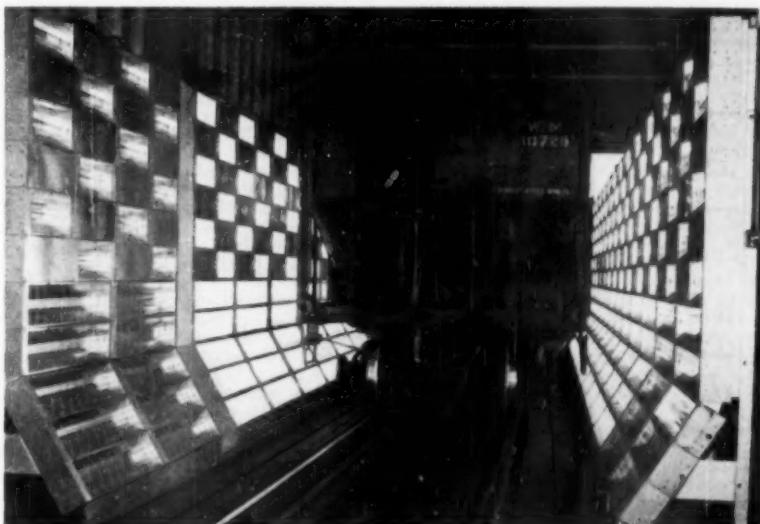
A result of his studies is the finding that tolerance in frogs is not individual-specific, Dr. Hildemann said. For example, tadpole A received a successful graft from tadpole B, and later it accepted a skin graft from tadpole C. This indicates that there may be some important antigens that are shared.

Thus it may be possible to "type" persons for their white blood cells just as we do for the red cells. Scientists could perhaps match antigenic differences or similarities and make a skin transplant that would last for a longer time than is now possible.

A skin graft that "stuck" for as long as two to three weeks would be helpful in treating burns, Dr. Hildemann said.

The studies, supported by the National Cancer Institute and the National Institutes of Health, may help circumvent the reactions that lead to the breakdown of vital tissue grafts.

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**COAL CAR "LAMP OVEN"**—Quartz infrared heat lamps have been used to thaw coal frozen in railroad hopper cars of the Western Maryland Railroad, operator of this test installation. This method may provide less maintenance, greater speed and economy, and less damage to railroad cars than in previous thawing methods. The infrared lamps were developed by General Electric in 1954. Fostoria Pressed Steel Company developed the oven.

# SCIENTIA INTERNATIONAL

## NOVAS DEL MENSE IN INTERLINGUA

**Recercas de Cancere.**—Es reportate ab Florida le caso de un paciente de cancer (melanoma maligne) qui se restablia "spontaneamente" pos recuperar una transfusion de sanguine ab un altere individuo qui habeva habite le mesmo malignitate. On admite le possibilite que il se trattava de un coincidentia, sed le occurrentia merita studios additional. Tests laboratorialia va revelate nulle activitate viralis in le sanguine del due patients.

**Psychologia.**—Un observator qui concentra su attention super le occurrentia de un certe tipo de signal perde su alertia intra aliquas horas si le signal in question occurre raramente o non del todo. Al Laboratorios de Recercas Naval a Washington on ha constatate que le deteriorior, del alertia de observatores pote esser evitata o relentata si "pseudo-signalis" es provideite a frequente interravlos, mesmo si illos es claramente differente al signalis expectate.

**Manufactura de Papiro.**—Le consumption de ligno in le production de papiro es enorme. Le industria de ligno potera satisfacer le correspondente demanda plus facilmente si farina de ligno—an usque nunc unusable producto lateral—poteva esser usata como materia prima de papiro. Le obstaculo es le facto que farina de ligno ha fibras troppo curte pro esser incorporabile in le pulpa de papiro. Recentemente un nove tipo de serra ha essite inventate le qual produce un farina de ligno a fibras multo plus longe. Le nove tipo de serra ha simplemente un reducecito numero de dentes. Essays de fabricar papiro ex le farina de ligno a longe fibras ha succedito promittentemente. Un fabrica experimental es jam in servizio.

**Oceanographia.**—In le regiones arctic e antarctica la differencia inter marea alte e marea basse pare esser minus marcata que in regiones de climate moderate o tropic. Un explication possibile es que le basse temperaturas in le regiones polar augmenta le densitate del aqua e assi etiam su salinitate. Observations a Point Barrow in Alaska, effectuate sub le egide del Institution Scripps de Oceanographia, pare corroborar le supra-presentate explication.

**Psychologia Experimental.**—In experimentos con simias, psychologos al Universitate Columbia ha demonstrate un efecto deterioratori del agente tranquillisante chlorpromazina super le senso "auto-critic" del individuo tractate con illo.—Simias pote esser trainate, per exemplo, a batter un specific numero de vices contra un objecto pro obtener un recompensa de alimento. Post tractamentos con chlorpromazina, simias trovava difficile batter le correcte numero de vices. Illas batteva troppo o non satis frequentemente. Le applicabilitate de iste observations in le caso de subjectos human ha non ancora essite provata, sed illo es multo probable.

**Automobilismo.**—Esseva patentate un motor a octo cylindros que automaticamente labora con solmente quattro quando le requirent quantitatate de labor es basse. Le advantage de iste sistema es un grande economia de combustibile sin perdita de efficacia.

**Ichthyologia.**—Un specie de nostalgia ha essite notate in pisces transferite ab un milieu acostumate a un altere non previamente cognoscite. In le caso de tructas il esseva constata que lor effortios de trovar un domicilio in le novo milieu, si non successose intra aliquas dies, deveni si phrenetic que le resultante stress pote causar le morte de usque a 50 pro cento de tal "personas displaciante" in le mundo piscin. Le causa immediate de morte sub iste condicions pare esser un excessive augmento del nivello de acido lactic in le sanguine.

**Recercas de Cancere.**—In experimentos con muses, Dr. L. Gross de New York ha isolate ex sanguine leucemic un filtrato que ille considera como probabilmente de natura viralis. Altere muses reageva a injectiones del filtrato con le desenvolvemento de leucemia o—isto es un phenomeno del prime importancia—de altere tipos de malignitate.

**Lacteria.**—Esseva constatate al Universitate Wisconsin que lacte in cassas de latta retene melio le characteristics de lacte fresc si ante le processage illo es levemente calefacte. Le calefaction causa le combination de caseina alpha con lactoglobulina beta, e isto—pro un ration o un altere—preveni certe indesirable alteraciones in le producto final.

**Hematologia.**—Un gruppo de scientists anglo e american, laborante con cellulas radioisotopicamente marcate, ha constatate que leucocytos de porcos de India reduce e non augmenta lor dimensiones in le curso de lor vita. Post lor origine in le normal sistema hematopoietic, le leucocytos in le circulation pot divide se, sed le duo partes non re-augmenta lor volumen: illos remane medietates de lor ancestres. Iste phenomeno se repeate in plure generations usque finalmente le micissime leucocytos terminal dispire in un maniera que es non ancora clar.

**Alimentos.**—Multa recercas es in progresso pro perfectionar methodos de preservar alimentos pro futur astronautas. Le plus importante phase de iste recercas es le sterilisation de completemente preparate repastos per irradiation ionisante. On crede que multes del desenvolvementos in iste campo va esser usable etiam in le hospitales terrestre ubi le cocina es un institution costose e complexe. Il es ben possibile que le hospital futur va haber nulle cocina sed solmente un grande magasin con numerosissime tipos de repasto irradiate e preste a esser calefacte quasi in le sala del pacientes mesme.

**Astronomia.**—In 1946 le luna esseva "discooperite" per radar. Le prime tal "discoertura" de un planeta esseva effectuate in 1958 in le caso de Venera per expertos del Instituto Technologic de Massachusetts. Le tempore requirit per le signal de radar in su viage de ir e retornar inter le terra e Venera ha permitite un plus exacte calculation del distanta inter iste duo corporis.

**Inventiones.**—Esseva inventate un parapluvia con un lumine electric in su puncta. Le function del lumine es preventi collisiones de pedones qui noctambula in le pluvia in stratas non-illuminate.

**Animales Domestic.**—Pulices de cattos e canes es difficile a occider per medio de insecticidas chimic. Un entomologo al Universitate California ha constatate que certe pulveres, quando fricte in le pilos de cattos e canes, fortia le pulices (per un action puramente physic) a exir e perir.

**Atomas pro le Pace.**—Le Statos Unite plana instalar in Antarctica quattro micer electrogeneratores nucleari. Isto es le programma pro le veniente tres annos. Illa va esset un bon comenciamiento in un campo de potentilidades quasi sin limite. Geologos ha jam constatate le presentia de 178 differente mineralis in Antarctica ben que minus que un pro cento de ille continente ha essite explorate. Si in le futuro on vola exploitar le ressourcess de ferro, carbon, auro, argento, stanno, plumbo, etc. que Antarctica possede, grande quantitates de incostose energia electrica va esser requirete. Secundo nostre currente cognoscencias, solmente le uso de reactores nucleari como electrogeneratores va esser capace de solver iste problema.

### GENERAL SCIENCE

#### Reading Interlingua

► YOU CAN READ Interlingua if you had no more than one semester of high school French or Spanish or Latin and flunked it. You can read and understand a great deal of it even if you had never had contact with any foreign language.

Send this page to an acquaintance abroad and tell him that he can get additional information about Interlingua from DR. ALEXANDER GODE, SCIENCE SERVICE's Interlingua Division, 80 E. 11th St., New York 3, N. Y.

Financial contributions to the Interlingua program are needed.

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## ASTRONAUTICS

# New Satellite Launching

**The Discoverer series of satellite launchings is aimed at safe recovery of orbiting vehicle. The assured return of instruments, animals, then man, lies in the future.**

## See Front Cover

► THE MOST RECENT LAUNCHING of U. S. satellites highlights problems still to be solved before man achieves space flight.

Foremost is the recovery problem. Despite successful recovery of nose cones from missiles and animals from rocket flights, the return of a man or animal from an earth orbit or space flight lies in the future.

One aim of the Discoverer series of satellite launchings being made by the Defense Department from Vandenberg Air Force Base, Calif., is to solve the re-entry problem. Discoverer II, launched April 13, carried a re-entry vehicle weighing 195 pounds. The attempted recovery was not successful, however, although the 1,600-pound satellite is expected to remain in its polar orbit until about mid-May. The Air Force said Discoverer II was circling the earth every 90.84 minutes at a speed of more than 17,000 miles an hour. It ranges from 243 miles from earth to 156 miles.

Another space flight problem, to be solved even farther in the future, is mapping space to avoid regions of intense radiation such as found in the Van Allen belts. A first step toward doing this will be made by a future National Aeronautics and Space Administration's Vanguard satellite, which will carry a magnetometer to measure the earth's magnetic field that guides and concentrates the radiation particles.

At least two problems are international in scope—the radio frequencies satellites should use and the lifetimes of their batteries, and

who owns outer space or the moon and other planets.

It is quite likely that in the future dozens of earth-circling satellites chattering away at various frequencies on solar-powered batteries will prove extremely troublesome since there will be no way to stop their noise. New and improved methods of obtaining electrical power for satellites, such as NASA's paddle-wheeled vehicle to be tested soon, will augment the problem of unceasing clamor from space.

In this satellite, shown in the photograph on the cover of this week's SCIENCE NEWS LETTER, paddle-like fins are attached to the spherical instrument and battery container to act as solar cells. Testing the efficiency of this configuration as a satellite's energy source is a first step toward exploring the planets, particularly Venus and Mars.

Many persons believe the United Nations should lay claim to outer space, as well as the planets. Chances are high, however, that in the long run, no one will own space.

Even defining where space begins is a problem. Does it start at about 22,000 feet, where pilots first begin to experience space-equivalent conditions? Would a reconnaissance satellite circling at 200 miles violate the territory of all the countries of which photographs might be taken? That is not yet a question since present instruments cannot give sufficient detail except for such broad outlines as cloud cover. But better devices are sure to be developed in the future, especially for shorter-lived satellites circling at about 60-mile heights.

Science News Letter, April 25, 1959

## AVIATION

# Space Research Problems

► SCIENTIFIC PROBLEMS pressing for solution in the fields of aviation and aeronautics were outlined by Maj. Gen. John W. Sessums Jr., USAF Air Research and Development Command, before the World Congress of Flight at Las Vegas, Nev.

He said scientists should step up work on: converting heat directly into electricity; getting more power per pound of fuel; propulsion in space-plasma jets, ion and photon rockets; lightweight, long-duration systems to provide electrical power in space without nuclear radiation, and protection of man against radiation in space.

Brig. Gen. B. G. Holzman, commander, Air Research and Development Command, Office of Scientific Research, mentioned these additional problems as areas for basic research:

Study of cosmic rays; properties of intermediate isotopes for use in lightweight

shielding; fusion, or another simple way to release all the energy in the atom.

He said it is possible that theories concerning the gravity fields of stars may provide new understanding of the nature of atomic nuclei. Application of quantum mechanics concepts to real chemical systems may help explain the internal structure and properties of materials.

Science News Letter, April 25, 1959

## MEDICINE

## "Go-Getter" Type Is Heart Attack Candidate

► THE AMERICAN "go-getter" type is a prime candidate for a heart attack.

There appears to be a strong link between the behavior of a man with regard to his business and social activities and his chances of being a victim of a heart attack,

two San Francisco specialists have suggested.

Intensive studies to determine the reasons for the marked increase in coronary disease and the increased incidence of heart attacks among both younger and older men and women suggest that:

A person who is full of drive toward previously selected goals; loves competition, both in work and play, and strives to "best" the other fellow; desires the position of "top man"; constantly strives for recognition and advancement; accepts responsibilities; constantly drives himself to meet deadlines and who, as a result, must speed up everything from his daily work to his ordinary living habits, is a person who is likely to suffer a heart attack.

On the other hand, a high fat content diet, moderate obesity, people with anxieties and frustrations, heavy smoking and moderate alcohol intake did not materially affect the studies unless they were coupled with the attitudes previously mentioned.

The results of the study were presented at a meeting of the American Heart Association by Drs. Meyer Friedman and Ray H. Rosenman of San Francisco.

Science News Letter, April 25, 1959

## OCEANOGRAPHY

## New Lagoon Found Under 500 Feet of Water in Gulf

► AN UNUSUAL lagoon has been discovered: it lies under 500 feet of water in the Gulf of Mexico, oceanographers of the Coast and Geodetic Survey have reported.

Lagoons are shallow ponds or lakes. Their surrounding land formations are common along the coastline. But this new lagoon is under 500 feet of water 150 miles out in the Gulf, George F. Jordan and Dr. Harris B. Stewart Jr. reported.

The lagoon is situated inside a perfectly formed barrier spit, a curving ridge 65 miles long, that extends west of Key West, Fla. The oceanographers have named the formation Howell Hook in honor of Commander J. A. Howell, a Survey officer who in 1872 took the first depth soundings in the area.

Since the lagoon opens toward the north, the discoverers expressed the opinion that at the period it was built the prevailing coastal currents were northward. They now run southward toward the Florida Straits and into the Gulf Stream.

Until the oceanographers can analyze samples of the bottom sediment, the exact geological age of the formation will remain undetermined. The investigators call it a "drowned" barrier beach. This is the term scientists use when they do not know whether the sea rose or the land sank or both.

They do know, however, that the water level at the spit, or ridge, was once from 450 to 600 feet below where it is today. Since the spit and its enclosed lagoon and channel have been so perfectly "mummified," the men deduced that after nature built them, the spit was preserved by cementation or encrustation, plus an absence of land sediments, which normally mask depressions like a lagoon.

Science News Letter, April 25, 1959

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**MEDICINE****Drug Holds Promise in Artery Disease Control**

► A PILL that might one day, after much more experimentation, mean the control of atherosclerosis was described to scientists meeting at the Federation of American Societies for Experimental Biology in Atlantic City.

The amount of cholesterol, believed to be a contributing cause of some heart and artery disease, was lowered by the administration of a new drug, Mer-29, Dr. Thomas R. Blohm of the Wm. S. Merrell Co., Cincinnati, Ohio, reported.

In tests with monkeys and rats, Dr. Blohm and associates found that both the total cholesterol in the body and serum cholesterol was reduced. Mer-29 apparently blocks or inhibits the synthesis of cholesterol at some late stage in its production. The interference seems to occur with the conversion of intermediates to cholesterol, studies with carbon-14-labeled sodium acetate have indicated.

Plasma cholesterol levels in rats dropped as much as 62% with cholesterol reduction in the aorta of 21%.

Clinical tests of the drug involving some 80 ambulatory patients, about one-half with heart disease, show the drug lowers serum and body cholesterol in humans also. However, the new drug has been tested for only six months, researchers reported. It is still to be determined what the drug's long-term effects would be. As yet, toxicity in the form of nausea and vomiting has been reported as a side effect with higher doses in some persons.

In the clinical tests it "looks like" continuous administration of the drug might be necessary. One pill of 250 milligrams a day was effective in reducing serum cholesterol. However, after the drug was withdrawn, cholesterol levels rose again. No weight changes were reported for the patients.

Science News Letter, April 25, 1959

**PUBLIC HEALTH****Proposed FDA Order Limits Lipstick Shades**

► THE WIDE VARIETY of lipstick colors now available will dwindle rapidly if a recently proposed order of the Food and Drug Administration is finally issued.

The order concerns 17 coal-tar colors that are used principally in lipsticks. The FDA order would remove these colors from the approved list of substances that can be freely used in the manufacture of drugs and cosmetics.

Laboratory tests have shown that these colors cannot be certified as harmless for unrestricted use in products intended for internal consumption. This includes lipstick, which, in normal use, may enter the digestive tract of women and men.

In addition to the order to stop using the 17 colors, FDA proposed an order to ban the use of stocks of these colors. Thus, manufacturers would be prevented from

making new batches of these colors for products that would eventually enter the digestive system, John L. Harvey, deputy commissioner of food and drugs, explained.

The proposed orders would not affect the finished product, however. Lipsticks already produced and those on cosmetic counter shelves could still be sold. Only stocks of the colors already made but not in finished products would be affected.

FDA has not received any reports of injury to users of lipsticks or drugs or foods made with the coal-tar colors being considered.

But under the law as recently interpreted by the Supreme Court, the FDA cannot set the amounts of coal-tar colors to be used in foods, drugs and cosmetics. Therefore, the agency cannot list and certify the safety of colors for unrestricted use unless they are found to be completely harmless, the deputy commissioner added.

The coal-tar colors offer a wider variety of shades than other available colors. Extensive research in this field may produce safer substitutes. Meanwhile, 21 red colors remain unaffected by this order.

The FDA order has invited comments from industry and interested persons. These comments will be reviewed and considered before a final order is drafted.

Science News Letter, April 25, 1959

**PLANT PHYSIOLOGY****Yeasts, Though Simple, Can Pick Their Mates**

► ALTHOUGH some yeast plants probably possess the simplest type of sexual differentiation known, they nevertheless know how to pick their mates.

Recent research reveals for the first time biochemical differences between mating types of some yeasts that seem to explain their mating behavior.

One mating type of the yeast *Hansenula wingei* has been found to possess a specific protein on its cell surface which is complementary to a polysaccharide, a complex carbohydrate, on the cell surface of the opposite mating type.

It had been previously reported that suspensions of the vegetative cells of the two mating types, when brought together under appropriate conditions, would form a mass agglutination, or clumping together of cells, indicating a strong attractive force between the two types. However, exactly why was not understood.

The mating component of one of the types was known to be removable by the enzyme trypsin, and was therefore probably a protein.

The mating component of the other mating type was known to be not a protein and was thus believed to be a polysaccharide.

In studies reported by Thomas D. Brock, department of biology, Western Reserve University, Cleveland, in *Science* (April 10), evidence has been found for the necessity of a polysaccharide for agglutination of one of the mating types.

The research also shows that there is a possibility of studying, at the molecular level, one of the results of gene action.

Science News Letter, April 25, 1959

## EDUCATION

# New Math Program

► A MATHEMATICS PROGRAM that should be studied by all secondary school students capable of future college work has been outlined. The improved program is described in a 63-page report by the commission of mathematics of the College Entrance Examination Board, New York, entitled "Program for College Preparatory Mathematics."

The traditional curriculum, the commission reported, fails to reflect adequately the spirit of contemporary mathematics. In order that the school and college curricula meet the needs of mathematics itself, and of its applications, it said, there must be a change.

"College entrance requirements should be restated in broad and significant terms designed to encourage schools to introduce curricula and courses oriented toward the development of mathematical power, insight and understanding, rather than toward coverage of formalized material."

As many as possible of the college-capable must be urged to study challenging mathematics for four years in high school, the report said. None of them should study mathematics for less than three years, and the most gifted should accelerate their studies in mathematics so as to undertake the Advanced Placement Program.

Among the major proposals outlined by the commission were: strong preparation

in concepts and skills for college math at the level of calculus and analytic geometry; understanding of the nature and role of deductive reasoning, in algebra as well as in geometry; appreciation of mathematical structure or patterns; judicious use of unifying ideas, sets, variables, functions and relations; treatment of inequalities along with equations; incorporating some coordinate geometry, solid geometry and space perception with plane geometry; introduction in grade 11 of fundamental trigonometry, centered on coordinates, vectors and complex numbers; emphasis in grade 12 on elementary functions, polynomial exponential, circular; and recommendation of additional alternative units for grade 12; either introductory probability with statistical applications or an introduction to modern algebra.

Science News Letter, April 25, 1959

## ENGINEERING

## 100-Mile Roadway to Be Dug in Greenland Ice

► A 100-MILE covered highway will be gouged out of the Greenland ice cap to supply an isolated Army camp now under construction.

The roadway will be cut 28 feet deep in the Arctic cap and will be wide enough, 22 feet, to handle two lanes of traffic.

Vehicles probably will be electric-driven in order to eliminate the danger of carbon monoxide fumes from internal combustion engines. At least two modes of electric transportation are under consideration: a rail system, and a cable system by which cars would be pulled over the roadbed on sled-like runners.

Robert R. Philippe, U. S. Army Corps of Engineers' research and development division, said another system would entail making a solid roadbed out of pressed snow briquettes. Wheeled vehicles would be directed by shallow chutes in the roadbed.

Mr. Philippe estimated roadway construction could move along at four miles a day. The cost would be a small fraction of that of concrete highways, which cannot be built much faster than a mile a week. His estimate is based on experience with some short experimental roadways constructed in Greenland.

A parade of Peter snow millers will be used in the construction, the first one digging out a trench about five feet deep and seven feet wide. Two more milling machines will follow, doubling the depth of the trench and under-cutting it along the sides. The next two machines will deepen the under-cut. Then two groups of three machines will make a second under-cut the full width of the roadway.

The seven-foot opening along the top of the roadway will be covered with metal roof forms. Pulverized snow spewed out by the millers will be shoveled over the forms. When the "Peter snow" hardens, the forms will be removed and the roadway finished.

Sunlight filtering through the snow roof not only will provide more than adequate lighting, but will color the area with blues and purples.

Science News Letter, April 25, 1959

## CONSERVATION

## Australia's Kangaroos At Plague Proportions

► KANGAROOS HAVE now reached plague proportions in many parts of Australia, threatening livestock and crops.

Six years of open seasons have failed to reduce the kangaroo population, which is now estimated at more than 5,000,000, A. Strom, guardian of fauna for New South Wales, reported.

Neither shooting nor poisoning the animals is practical because of the high cost of ammunition and the danger of harming other animals. Since control, not eradication, is desired, the scientists are not looking for a disease that would kill the kangaroos as myxomatosis has killed rabbits in Australia.

A full-scale biological investigation into the habits of the kangaroo is needed, Dr. J. W. Evans, director of the Australian Museum, said. Scientists should study its breeding and migratory habits, its eating habits and how long it could live without water.

The kangaroo causes damage to fencing, pasture and waterholes in addition to eating crops intended for livestock.

Science News Letter, April 25, 1959



**KANGAROO CLUTCH**—Kangaroos and wallabies, the latter a small species of kangaroo, are abundant in many parts of Australia and Tasmania. They are also found in Papua and the Aru Islands. These marsupials, except the tree wallaby, graze on hills and plains, hopping on hind legs with the aid of their strong tails. They have been known to bound 25 feet at speeds of more than 25 miles per hour. The young are only one inch long when born and are suckled in a large pouch in the mother's body.

## PSYCHOLOGY

**One Test Not Enough to Measure Intelligence**

► ONE OR TWO tests are not enough to measure the intellectual resources of an individual, Dr. J. P. Guilford of the University of Southern California said in the 1959 Walter V. Bingham Memorial Lecture. The lecture is one of a series established in 1954 on "Discovery of the Talented."

Intellectual resources are multidimensional, Dr. Guilford explained, and should be measured by multiple scores and profiles of scores instead of the one or two scores that have been customary.

The human intellect might be represented by a model consisting of a three-dimensional cube, each face of which would represent a way in which intellectual abilities differ from one another. One variation pertains to the kind of mental operation performed as, for example, evaluation, memory or cognition. Another pertains to the kind of material or content on which the operation is performed—for example, symbolic or behavioral. A third dimension, or face, pertains to the kind of product resulting from the operations, such as relations or implications.

Dr. Guilford's theoretical model contains five kinds of operations, four kinds of content, and six kinds of products. These add up to 120 different hypothetical intellectual abilities. Since the model was originally conceived, it has successfully predicted the finding of at least ten of these factors.

The Bingham Lecture series honors the late Dr. Walter Van Dyke Bingham, a psychologist who pioneered in the recognition and measurement of various kinds of talent, particularly in the scientific and technical fields. It was established by Dr. Bingham's widow, Millicent Todd Bingham.

Science News Letter, April 25, 1959

## BIOPHYSICS

**Better Computers Result From Human Brain Study**

► STUDIES OF the human brain are expected to show scientists how to build better computers.

Brig. Gen. B. G. Holzman, commander of the Air Research and Development Command, Office of Scientific Research, told the World Congress of Flight at Las Vegas, Nev., that studies of a beetle's eye have already provided a schematic wiring diagram for "a radical new type of absolute air-speed indicator." He said research in human neurobiology and neurochemistry may provide clues to building better computers.

Maj. Ralph O. Griffin, director of resources, European office, Air Research and Development Command research program, described European experiments being supported by the Air Force along these lines:

Dr. Sem-Jacobsen of Norway is recording brain waves by means of electrodes placed on the heads of jet pilots in flight.

Prof. J. Z. Young of London University is training octopuses to recognize the dif-

ference between similar letter-like shapes. He then destroys parts of the brain.

A machine whose capacity to perceive and remember shapes approaches that of the octopus has been developed. The octopus is believed to use an analyzing system for pattern recognition that is simpler and more economical than those so far proposed for the job by man.

Studies of the brains of ants, beetles, and animals are also expected to produce results directly applicable to computer design.

Dr. Jouvet of France, experimenting with both human and animal subjects, has determined that concentration on a particular object can block out other senses. Thus a pilot concentrating on radio communication may become temporarily blind to approaching objects or unable to hear a warning bell, see a red light, or smell smoke or fuel fumes in his cockpit. The impulses from his sensory organs do not get through to the brain. The experiments will have a bearing on future instrument design, warning signals and duty assignments.

Science News Letter, April 25, 1959

## OCEANOGRAPHY

**Origin Proposed for Metal-Rich Sea Deposits**

► THE VALUABLE metal-rich "pebbles" found on the ocean floor were formed by living systems.

This suggestion for the origin of manganese-rich deposits on the sea floor has been made by Drs. John W. Graham and Susan C. Cooper of the Woods Hole Oceanographic Institution, Woods Hole, Mass. The oceanic deposits have been found by other scientists to contain sufficient quantities of metals that mining them could prove profitable.

In addition to manganese the sea floor nodules contain appreciable quantities of nickel, cobalt, copper and iron, for each of which there is a large industrial demand. Their origin is unknown but some scientists hold they were formed by inorganic instead of biological processes.

Drs. Graham and Cooper believe the nodules were formed when an unidentified organism made its home on the outer coating of the larger organisms known as Foraminifera after the latter had died. The mysterious organism, which the scientists are now trying to isolate, was attracted to the Foraminifera coating because it was rich in protein.

The unidentified organism had the ability to extract and thereby concentrate the valuable metals from sea water, the scientists report in *Nature* (April 11). It used the sea water for food.

Supporting their theory of biological origin for the nodules is an analysis of light tan mud dredged up from the floor of the Atlantic near Bermuda where the ocean is nearly three miles deep. Chemical tests showed the metal-rich material was formed as a surface deposit on the Foraminifera, not through capture of manganese-rich sea particles by living Foraminifera.

Science News Letter, April 25, 1959



## BIOLOGY

**Domestication May Increase Birth of Twins**

► MAN IS behind the chimpanzee so far as having twins goes.

One reason for this, two biologists report in *Science* (April 10), may be that twinning is a newly acquired character resulting from man's domestication of the chimp.

Detailed studies of the number of twins and the gestation period for a colony of captive chimps show a recent increase in the number of twins born. Only one pair of twins was produced during the years 1930 through late 1951. This figure, one pair of twins from 92 births, is about the same for man. However, since 1951, five additional pairs of twins have been born in 28 births. The chimpanzees now seem to have an over-all twinning rate of five percent.

The reasons for the increase are not clear, report Drs. L. J. Peacock and C. M. Rogers of the Yerkes Laboratories of Primate Biology, Orange Park, Fla. Domestication may explain the findings that chimpanzees and man, both primates, no longer produce twins at roughly the same rate.

Possibly domesticating the chimps has led to a selection of genetic factors resulting in multiple births. Or other factors may have increased the rate of twinning.

Science News Letter, April 25, 1959

## BIOLOGY

**Use of Gelatin May Make Dating More Accurate**

► THE RADIOCARBON dating of ancient bones, important technique in anthropology and geology, may be made more accurate by a new development reported by Drs. F. Marott Sinex and Barbara Faris of Boston University School of Medicine.

They have isolated gelatin from 12,000-year-old deer antlers and this gelatin, which was 96% pure, was used for dating.

Tests of the age of old objects using radiocarbon dating have usually depended on the carbon content; charcoal is the substance most extensively used.

Chief difficulty has been the contamination of the ancient sample with more modern carbon. Ancient bones are porous and are capable of absorbing organic material from the soil. Charcoal is a complex organic material which presents a large surface area that may absorb other organic substances.

Gelatin is not likely to be contaminated in such a way by extraneous carbon, the investigators report. Details of how the gelatin was extracted from the ancient antlers are reported in *Science* (April 10).

Science News Letter, April 25, 1959

# SCIE FIELDS

## PHYSIOLOGY

## Antibody May Be Link To Atherosclerosis

► THE EXISTENCE of an antibody against mast cells, body cells found in bone, muscle and other connective tissue that play an important role in carrying fat, was revealed to scientists at the American Physiological Society meeting in Atlantic City.

Mast cells liberate the anti-clotting compound heparin which in turn, stimulates the production of an enzyme, lipoprotein lipase, that acts to help carry fat through the blood. Earlier research has shown that older persons with atherosclerosis have fewer mast cells than young persons or those who do not have atherosclerosis.

Rabbits were immunized with mast cells from rats, Drs. Y. S. Lewis and D. E. Smith of Argonne National Laboratory, Lemont, Ill., said. From three to five days after the last of seven injections of mast cells, the rabbit serum revealed the presence of an antibody.

Peak antibody production was achieved in about ten days, the scientists reported, when all of the mast cells in the mesentery, intestinal membranes, and 50% to 100% of the skin and ear mast cells were destroyed.

Some ten to 20 minutes after exposure to antiserum, the granules of mast cells in the living animals displayed rapid, small oscillatory movements. While only a few granules were involved at first, within minutes all cells were showing the same movements. Many mast cells suddenly broke open and the granules were released into the tissue, the scientists said.

Science News Letter, April 25, 1959

## NUTRITION

## Too Much Milk May Mean Trouble for Human Body

► SOME DOUBT has been cast on just how important a quart of milk a day may be in maintaining health.

Results of animal studies point to possible dangers when levels of calcium intake exceed one gram a day in humans or one percent of the diet in animals, Dr. G. K. Davis, University of Florida, told a symposium on the effects of high calcium intake.

One quart of milk contains one gram of calcium.

Apparently, Dr. Davis said, high calcium intake is associated with various disturbances involving the kidney and the absorption of other nutrients. One of the most commonly associated disturbances is the formation of urinary stones.

Laboratory studies indicate that some forms of anemia and goiter, for example, may result from too much calcium and

too little of the other important nutrients. Just how this happens is not known, Dr. Davis said. Proper balance is essential, however.

If an individual has low or marginal amounts of iron or iodine, the animal studies indicate that high calcium may actually cause anemia or goiter. In one study reported to the symposium, rickets were produced in laboratory rats with low phosphorus and four times as much calcium as phosphorus. When the amounts of those nutrients were "in balance," the course of the disease was arrested.

In discussing the research, Dr. D. M. Hegsted of Harvard University suggested that evidence in favor of calcium is lacking as is evidence against calcium. He said it might be wise to take the "pressure off" calcium as the major nutritional requirement in the United States. Today the recommended daily requirement is 0.8 gram of calcium.

This requirement was established on the basis of the body's balance of calcium, the amount taken in compared with the amount excreted. However, Dr. Hegsted believes this may not be adequate evidence that this amount is needed, but is rather a reflection of our eating habits. Studies in other countries indicate that the calcium in the human body can be in balance at an intake of 0.3 gram a day.

The symposium on calcium was held as part of the 43rd annual meeting of the Federation of American Societies for Experimental Biology in Atlantic City.

Science News Letter, April 25, 1959

## PUBLIC HEALTH

## Paralytic Polio Increases 60% in 1958-59 Season

► THE NUMBER of paralytic polio cases for this past season increased 60% over the 1957-58 season year, U. S. Public Health Service data show.

Thus, the 1958-59 poliomyelitis disease year, which closed this March 28, witnessed a substantial increase in the incidence of the crippling form of this disease as compared with the previous year.

During the 1957-58 season, a total of 5,587 cases of all types of polio were reported. The past season, 1958-59, was slightly higher, with 6,110 cases.

Only 35.9% or 2,005 of the 1957-58 cases were paralytic, while 52.5% or 3,206 of this last season were paralytic. Thus, although the total number of cases for the last season increased only 10%, the number of paralytic cases within that number was boosted 60% over the 1957-58 seasonal report.

July through December remained the months that witnessed the heaviest tolls of paralytic, non-paralytic and nonspecific polio for both years, the latest statistics reveal.

The incidence of all three types of polio dropped during the months from January through March in both years. This past season, however, the number of paralytic polio cases alone for these low months equaled the entire number of cases recorded in the same time period for 1957-58.

Science News Letter, April 25, 1959

## ASTRONOMY

## Unseen Companion of Double Star Found

► A SMALL UNSEEN companion of zeta Aquarii, once thought a double star, has been discovered from observations of wobblings in the orbits of the two larger stars.

The invisible star has a mass about three-tenths that of the sun and a visual magnitude of about 12. It revolves around the fainter star of the system in about 25 and a half years at a distance some nine times that from the sun to earth.

Discovery that zeta Aquarii is a triple system, made by Otto Franz of Dearborn Observatory, Evanston, Ill., is reported in the *Astronomical Journal*, a publication of the American Astronomical Society.

Science News Letter, April 25, 1959

## PHYSIOLOGY

## Lymphocytes Show Role In Cell Differentiation

► NEW CELLS from bits of old cells seem to be part of the story of how the living body maintains a flexible supply of white blood cells, suited to any emergency.

There is a close relation between the break-up of lymphocytes, large white blood cells that help protect the body against disease and infection, and development of new lymphocytes, Dr. M. Hill reports.

Apparently there is a continuous re-use of the remnants of these important cells. Studies with mice show simpler, reticular cells become lymphocytes as dead lymphocytes are "eaten," or destroyed by phagocytosis, in the body's "clean-up process."

Dr. Hill, now at the Institute of Biophysics, Czechoslovak Academy of Sciences, Brno, subjected mice to various kinds of stress: irradiation, injection with formaldehyde and with hydrocortisone. The mice's spleen lymph nodules were examined.

As the lymphocytes disintegrated, the cell protoplasm in the nearby reticular cells changed and their nuclei became enlarged. Eventually, in some cases of stress, the enlarged cells developed into more differentiated ones, usually immature plasma cells, but sometimes large and medium-sized lymphocytes.

These results and other research suggest that some substance, a "humoral factor," as yet unknown, is produced when lymphocytes disintegrate, Dr. Hill concludes.

It is probably derived from the white blood cell's nucleic acids or nucleoproteins and has the ability to maintain immature cells' characteristics at a normal level. However, when greater numbers of lymphocytes break up, as under stress such as brought on by infection, there is more of this "factor." New resting cells become immature ones.

The reverse can also happen, Dr. Hill says. Where there are fewer lymphocytes and thus decreasing production of the factor, immature cells "dedifferentiate" into reticular ones.

Details of the research appear in *Nature* (April 11).

Science News Letter, April 25, 1959

## ASTRONOMY

# Three Planets Now Visible

**Venus, Mars and Jupiter are visible on May evenings as the sky darkens. Saturn becomes visible as midnight approaches.**

By JAMES STOKLEY

► THREE PLANETS are visible to the naked eye on May evenings, as soon as the sky darkens, while a fourth appears before midnight.

The brightest of these is Venus, now so brilliant it can be seen soon after sunset, while dusk is gathering. After that, until it sets about three hours after the sun, Venus dominates the western sky, situated in the constellation of Gemini, the twins.

Mars is also in Gemini, but is about 1/130th as bright as Venus, due to its great distance at present, about 180,000,000 miles. This makes it appear similar to a star of the second magnitude, while Venus is many times brighter than first: minus 3.6 on the astronomical scale of brilliance.

Look to the southeast for the third May planet. This is Jupiter, currently on the border between Libra, the scales, and Scorpius, the scorpion. Although less than a quarter as bright as Venus, its magnitude is minus two, far exceeding any nearby star or planet. Thus it dominates the southeastern sky, much as Venus does in the west.

Saturn is May's fourth planet; it rises about 11:15, your own kind of standard time (add one hour for daylight saving time) at the first of May and about 9:15 at the end of the month. It is in Sagittarius, the archer, and is equal to a bright first magnitude star in prominence.

All these planets (except Saturn), as well as the stars of the May evening, are shown on the accompanying maps. These depict the skies at about 10:00 p.m. (standard time) at the first of May and an hour earlier at mid-month. They would also show them as they appear at 8:00 p.m. at the end of May, but at that time of year the sky does not become dark, over most of the United States, until after 9:00 p.m.

## Vega Is Brightest

The brightest star is Vega, in Lyra, the lyre, in the northeast. The next is Arcturus, high in the southeast in Bootes, the bear-driver. A good way to locate this star is to look first in the north at the familiar Great Dipper, which is part of Ursa Major, the great bear. In the bowl of the dipper are the pointers; if followed downwards they bring you to Polaris, the pole star, which stands directly over the North Pole. But if you follow the curve of the handle of the Big Dipper around to the south, you come to Arcturus. Continuing farther, it brings you to another first-magnitude star: Spica, in Virgo, the virgin.

To the right of Virgo, high in the south-

west, is Leo, the lion. This group contains a smaller figure known as the sickle. (The blade of the sickle forms the head of the lion.) In the handle of this implement is the star called Regulus.

In addition to Mars and Venus, the constellation of Gemini contains Pollux, another star of the first magnitude. Castor, which represents the other twin, is of the second magnitude. Looking to the right of this group, you will find Auriga, the charioteer, with the bright star Capella.

The maps also show two other first-magnitude stars, but each is so low in the sky that it appears many times fainter. One is Antares, in Scorpius, a little below Jupiter. The other is Deneb, in Cygnus, the swan, near the northeastern horizon, below Lyra. In a few months both will be prominent in the evening.

On May 18 Jupiter will be in opposition. This means that it is directly opposite the sun, so it rises at sunset and sets at sunrise. Also, since we are then in the same direction from the sun as Jupiter, it is closest to the earth. Its distance will be 405,800,000 miles.

This is a good time to observe Jupiter.

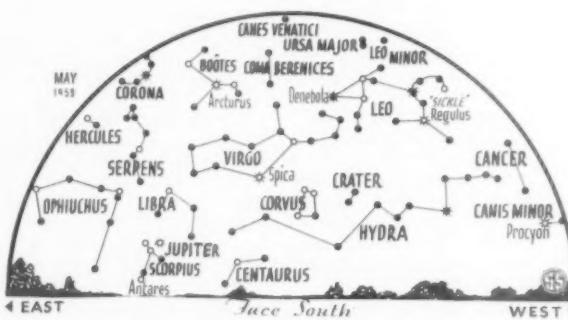
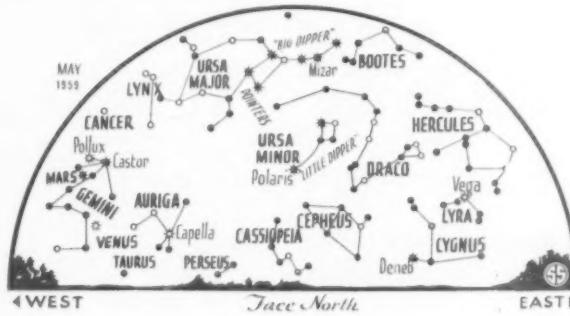
It makes a striking sight, even through a small telescope. It has 12 moons, four of which are as large as our moon, or larger. Two, in fact, are larger than the planet Mercury. These four can be seen with even rather small telescopes, and they are fascinating to watch, night after night, as they swing from one side of Jupiter to the other. Occasionally they even disappear from view, as they hide behind Jupiter, or suffer eclipse when they pass through its shadow.

## Dimensions of Jupiter

Through a telescope that magnifies only 40 diameters, Jupiter would look about as big as the moon does to the naked eye. Its shape is elliptical, rather than circular. Its diameter at the equator is 88,770 miles, but that from pole to pole is about six percent less, or 83,010 miles.

This flattening at the poles is a result of rapid rotation, for Jupiter turns on its axis in only 9 hours 55 minutes. Because of its enormous size, the speed of rotation at the equator is about 28,000 miles per hour. This results in centrifugal force so great that the planet's equator is thrown to a distance of nearly 3,000 miles farther from the center than are the poles, where there is no centrifugal force.

The equatorial bulge of the earth is only a little more than 13 miles. This is a result



• \* • SYMBOLS FOR STARS IN ORDER OF BRILLIANCE

of the earth's much smaller size and slower rotational speed, about 1,035 miles per hour.

If you look at Jupiter through a telescope, you will be impressed with the amount of detail that is visible. It is crossed by light and dark bands, parallel to the equator, which display a variety of color: orange, red, brown and even green. These features may change rapidly, so it is apparent that they are not part of a solid surface. Instead, what we see are tops of clouds which perpetually cover Jupiter.

Venus, too, is continually enshrouded in clouds, but they are merely a thin layer, like the clouds of earth.

Those of Jupiter make up much of that planet's volume. If you could land on what appears to be its equator, and then descend, you would go some 8,000 miles before you reached the bottom of the atmosphere, according to the widely accepted theories of Dr. Rupert Wildt of Yale University.

### Jupiter's "Slushy" Region

There you would come to a layer of ice, but probably there would be no sharp boundary; rather a slushy region which became more and more solid as you penetrated toward the center. Some 17,300 miles deeper, at a total depth of more than 28,000 miles, you would reach the bottom of the ice, and the top of the solid core, more than 28,000 miles in diameter, and probably of rock and metal. This accounts for only about eight percent of Jupiter's volume, while the core and the frozen ocean around it are only 55%; the rest is the atmosphere.

This consists of methane and ammonia, which have been detected by analysis of Jupiter's light. Probably a considerable amount of hydrogen is also present, although this cannot be so easily detected. At the "surface" of Jupiter, the top of the cloud layer, the temperature is about minus 150 degrees Fahrenheit. In many respects it would fail to qualify as a place where space ships could land. However, the moons of Jupiter might be more suitable for some future expedition. From one of these much could be learned about the giant planet, and many of its current puzzles could be solved.

### Celestial Time Table for May

May	EST	
5	early a.m.	Meteors visible, radiating from constellation of Aquarius.
7	3:11 p.m.	New moon.
	11:00 p.m.	Moon farthest; distance 252,600 miles.
11	9:11 a.m.	Moon passes Venus.
12	9:49 p.m.	Moon passes Mars.
15	3:09 p.m.	Moon in first quarter.
18	3:00 p.m.	Jupiter opposite sun; distance 405,800,000 miles.
21	midnight	Moon nearest; distance 221,900 miles.
22	12:43 a.m.	Moon passes Jupiter.
	7:56 a.m.	Full moon.
24	4:19 p.m.	Moon passes Saturn.
29	3:13 a.m.	Moon in last quarter.

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, April 25, 1959

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For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D.C. Request free publications direct from publisher, not from Science Service.

**ADVANCES IN INORGANIC CHEMISTRY AND RADIOCHEMISTRY**, Vol. I—H. J. Emelius and A. G. Sharpe—*Academic*, 449 p., \$12. One of the main features of this series is the integration of structural, kinetic and thermodynamic phenomena.

**ANTARCTIC SCOUT**—Richard Lee Chappell, foreword by Arthur A. Schuck, preface by Paul A. Siple—*Dodd*, 205 p., photographs by author, \$3.50. Eagle Scout's report on his experiences with the U.S. Antarctic Expedition during IGY.

**THE BIRD BAZARS OF NOVAYA ZEMLYA**—S. M. Uspenski, transl. by J. M. MacLennan—*Canadian Dept. of Northern Affairs and National Resources (Queen's Printer)*, 159 p., paper, \$1. Volume 4 of Translations of Russian Game Reports, of interest to biologists and those concerned with administration of seabirds.

**BIRTH CONTROL AND CATHOLIC DOCTRINE**—Alvah W. Solloway, preface by Aldous Huxley—*Beacon Press*, 257 p., \$3.95. A lawyer examines the Catholic position as set forth in the Church's own statements.

**CAREERS IN FORESTRY**—U. S. Forest Service—*Govt. Print. Off.* for Dept. of Agric., Misc. Pub. No. 249, rev. ed., 22 p., illus., paper, 20¢.

**CHLORPROPAMIDE AND DIABETES MELLITUS**—Martin G. Goldner, Ed.—*N. Y. Acad. of Sciences, Annals*, Vol. 74, Art. 3, 621 p., illus.,

paper, \$5. Pharmacological, metabolic and clinico-metabolic studies.

**DARWIN AND THE DARWINIAN REVOLUTION**—Gertrude Himmelfarb—*Doubleday*, 480 p., \$5.95. A scholarly reconstruction seeking to recapture a sense of how Darwin derived his theory.

**DISCOVERING CHEMISTRY**—Elizabeth K. Cooper—*Harcourt*, 190 p., illus. by author, \$3. Introduces boys and girls to the chemical elements and describes the structure of atom and molecule. Illustrated with more than 100 experiments safely performed in a home laboratory.

**ENDURANCE: SHACKLETON'S INCREDIBLE VOYAGE**—Alfred Lansing—*McGraw*, 282 p., illus., \$5. Account of the Imperial Trans-Atlantic Expedition in 1915, based on personal diaries and old ledgers.

**THE FIRST BOOK OF MAPS AND GLOBES**—Sam and Beryl Epstein—*Watts*, 63 p., illus. by Laszlo Roth, \$1.95. Acquaints children with map reading and map making, scale, symbols and use of maps, including glossary and bibliography.

**GENESIS AND GEOLOGY**—Charles Coulston Gilispie—*Harper*, new ed., 306 p., paper, \$1.75. A study in the relations of scientific thought, natural theology and social opinion in Great Britain, 1790-1850, first published in 1951.

**GLAUCOMA: TRANSACTIONS OF THE THIRD CONFERENCE**, 1958—Frank W. Newell, Ed.—*Macy*, 272 p., illus., \$5.25. Discusses tonography, osmotic factors in the formation of aqueous humor and consensual changes in intraocular pressure.

**GRASSBLADE JUNGLE**—Nesta Pain—*Coward-McCann*, 207 p., illus., \$3.75. Of grasshoppers, praying mantis, bees, cicadas, termites and scorpions.

**HEATING, VENTILATING, AIR CONDITIONING GUIDE 1959**—Am. Soc. of Heating and Air Conditioning Engineers, 37th ed., 768 p. plus index and advertising, illus., \$12.

**A HISTORY OF CYTOLOGY**—Arthur Hughes—*Abelard-Schuman*, 158 p., illus., \$5. History of the branch of biology concerned with the behavior, growth and reproduction of the single living cell. Author relates progress at each stage to the technical means available to the microscopists of their time.

**THE MAMMALS OF NORTH AMERICA** Vols. I and II—E. Raymond Hall and Keith R. Kelson—*Ronald*, 1083 p., 79 p. index, maps and drawings, \$35. Authors assumed that all mammals have had a common ancestor. Marsupials are treated first, later Carnivora; in each genus, oldest species are listed first, others in order of decreasing age. Subspecies are arranged alphabetically. Includes all pertinent taxonomic and distributional information.

**MAN-MADE SUN: STORY OF ZETA**—J. D. Jukes, foreword by Sir George Thomson—*Abelard-Schuman*, 136 p., illus., \$2.75. Tells about Harwell's thermonuclear machine, which achieved temperatures of a million degrees, and of the prospects of releasing the nuclear energy of deuterium in a controlled fashion.

**MATHEMATICS DICTIONARY**—Glenn James and Robert C. James, Eds.—*Van Nostrand*, 2nd ed., 546 p., \$15. English definitions of more than 7,000 mathematical terms, concepts and relationships, with multilingual indexes giving French, German, Russian and Spanish equivalents.

**ON THE TRACK OF UNKNOWN ANIMALS**—Bernard Heuvelmans, transl. from French by Richard Garnett, introd. by Gerald Durrell—*Hill & Wang*, 558 p., illus. by Monique Watteau, photographs, \$6.95. Zoologist examines evidence in scientific literature and local monographs in search of animals still not admitted to the catalogue of zoology.

**THE ORIGIN OF CIVILIZED SOCIETIES**—Rushton Coulbourn—*Princeton Univ. Press*, 200 p., \$4. Analysis of pertinent data drawn from archaeology, anthropology and history.

**THE ORIGIN OF ORIENTAL CIVILIZATION**—Walter A. Fairerviss, Jr.—*New Am. Lib.*, 192 p., illus., paper, 50¢. Anthropologist-Archaeologist recreates prehistoric Asia from fossil skeletons of early man, from bronzes and pottery, from the remains of weapons and tools, and from the ruins of burial grounds.

**OUR ATMOSPHERE**—Theo Loebssack, transl. from German by E. L. and D. Rewald—*Pantheon*, 256 p., illus., \$5. A scientist here introduces the general reader to the layers of the atmosphere, cosmic rays, sounds, air currents, visual effects, climate and its changes, and finally treats the effects of air on man.

**OUR NEW LIFE WITH THE ATOM**—Robert Rienow and Leona Train Rienow—*Crowell*, 202 p., illus., \$3.50. Gives the layman a working knowledge of atomic fission and nuclear fusion, and describes peaceful applications in power, medicine and industry.

**SCIENTIFIC RESEARCH AND DEVELOPMENT IN COLLEGES AND UNIVERSITIES: EXPENDITURES AND MANPOWER, 1953-54**—National Science Foundation, Alan T. Waterman, Dir.—*Govt. Print. Off.*, 173 p., paper, \$1. Final part of NSF survey of the over-all U. S. research and development effort during 1953-54.

(Continued on page 270)

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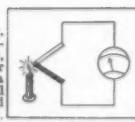
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The author carefully considers source material, and examines impartially, but strictly, eye-witness accounts and second-hand sources, experiments and observations, and shows the rationale of much that is sometimes considered supernatural or "beyond science." He spends more than 100 pages on ESP and PK, and shows how he has been involved in types of illusions and hallucinations, and throughout takes into account such factors as suggestion, mental dissociation, hysteria, and drugs which cause mental aberration.

Dr. Rawcliffe's book, which is recognized as the standard survey of its field, is wide in range, and his treatment throughout is thorough, fair, and reasonable. He offers one of the finest examinations of the evidence for ESP and PK adduced by Rhine and Soal, and provides a great deal of information on recent & abnormal psychology not usually discussed in books for laymen: onomatopoeia, hemotyphnia, xenoglossia, etc.

This book is indispensable for anyone who is interested in a scientific evaluation and explanation of the strange phenomena which sometimes occur or are claimed to occur. It will explain the factors which enable primitive clairvoyants to do what they do, and will also reveal many aspects of your own mind which you have probably not suspected. It is also one of the most interesting books in its area.

Preface by Julian Huxley. 14 photos. Formerly entitled, British edition, "Psychology of the Occult." Glossary of terms. 25-page bibliography. Index. 551 pp. Paperbd. \$2.00

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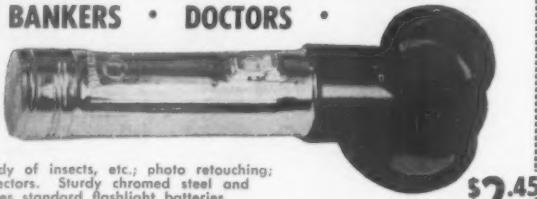
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## Books of the Week

(Continued from page 268)

**SPACE FLIGHT:** The Coming Exploration of the Universe—Lester del Ray—Golden Press, 56 p., illus. by John Polgreen, 50¢. Juvenile literature about rocket ships, spacemen and moon flights, giving an idea of distances and difficulties involved.

**SPRINGBOARDS TO SCIENCE:** Elizabeth Mecham Fuller and Mary Jackson Ellis—Denison, 44 p., illus., \$3. Suggests experiences and experiments to encourage children to develop an early interest in science.

**ST. LAWRENCE SEAWAY:** Clara Ingram Judson—Follett, 160 p., illus., \$3.95. Story of the vast power project and the cooperation between Canada and the U. S. in bringing it about.

**WAR AND THE SOVIET UNION:** Nuclear Weapons and the Revolution in Soviet Military and Political Thinking—H. S. Dinerstein—Prager, 268 p., \$5.50. Study prepared as part of research undertaken for the U. S. Air Force by the RAND Corporation.

**WATER: A RESOURCE:** Matthew F. Vessel and Herbert H. Wong—Fermon Pub., 14 p., illus., paper, 75¢. Experiments with water and related suggestions for science education.

**WHY MEN CONFESS:** O. John Rogge—Nelson, 298 p., \$5. A lawyer examines confessions of witches, of the innocent, of Russian communists, from the time of the Inquisition to our time of brainwashing.

**WOMEN AND WORK IN AMERICA:** Robert W. Smuts—Columbia Univ. Press, 180 p., \$4.50. Author delineates the revolutionary changes in the place of women in the world of work by drawing on contemporary accounts of the lives and work of individual women.

**WOMEN IN MODERN SCIENCE:** Edna Yost—Dodd, 176 p., illus., \$3. Biographies of eleven American women scientists in a variety of fields, five of them members of the National Academy of Sciences.

Science News Letter, April 25, 1959

## Questions

**ASTRONAUTICS**—What is the function of the paddles attached to the proposed satellites? p. 261

**CONSERVATION**—What animal is reaching plague proportions in Australia? p. 263

**OCEANOGRAPHY**—Where is the recently discovered unusual lagoon located? p. 261

**PHOTOGRAPHS**—Cover, National Aeronautics and Space Administration; p. 259, General Electric Company; p. 263, A. Scholes; p. 272, Spryton Products, Inc.

## Do You Know

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**ROTARY LAWN MOWER SHARPENER** is part of a kit containing power drill, grinding wheel, wire brush, four-piece arbor set, and adjustable sharpening fixture. The latter enables other garden tools, such as hoes, trowels and spades, to be sharpened.

Science News Letter, April 25, 1959

**AUTOMOBILE SEAT BELTS** of woven, pre-stretched nylon come in 12 fade-proof colors to match new cars. The belts are designed to absorb an impact up to 5,000 pounds and are equipped with emergency escape buckles. They may be installed in less than 30 minutes.

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**BALL-POINT QUILL PENS** are made from real turkey quills averaging more than 12 inches in length. They are fitted with smooth-writing, silver-tipped refills, and come with small pine bases to make complete desk sets.

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hoses, or electric wires, and is powered by a replaceable can of propellant gas that delivers a steady pressure. The spray gun, shown in the photograph, is intended for the hobbyist, handyman and homemaker.

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## Nature Ramblings

By HORACE LOFTIN

FOR 24 YEARS there had been no deer hunting allowed in the 41,000-acre tract in central Florida called the Inverness Area. But studies by the Florida Game Commission had revealed the deer herd there was exceeding the size that the area could properly support.

If the excess animals were not taken by sportsmen, then they would succumb to malnutrition and disease. Therefore, the deer season was opened there for 1958.

On opening day, Nov. 15, the Game Commission unlocked four gates to the area, as the first of a projected series of controlled hunts to harvest the surplus deer. To the utter amazement of nearly everyone, 3,315 eager hunters poured into the area that first day, taking a known total of 440 legal bucks. The Game Commission had only anticipated a total kill of about 250 deer throughout the entire season.

The Inverness hunt ended the day it began for the 1958 season.

As the news hit the front pages of the

### Too Many Deer



state, there was some hasty criticism—some to the effect that the herd was "wiped out." However, sober analysis of the facts, gathered before and after the hunt, reveals that the only real cause for dismay from the big kill was that many sportsmen who missed that first day were denied a chance to hunt.

It was known at the beginning of the hunt that the Inverness deer herd stood at some 2,600 animals and that these deer were concentrated there twice as thickly as in any other known area of the state. Figuring the expected natural increase of the herd

through births, less the number killed in the hunt and by natural causes, this year's herd is expected to be close to 2,800 animals!

So rather than fewer deer, there will probably be even more deer in the 1959 hunting season—a circumstance which might be lamented, since the area is already overstocked with deer. Animals taken in the 1958 hunt averaged only 103 pounds, as compared with 116 pounds for the average deer of the nearby, well-hunted Ocala area.

There is a moral here: Just as there can be too many cattle for the pasturage, there can be too many deer in the woods for their optimum growth and survival. The only sensible thing to do in either case is to harvest the annual surplus.

Next hunting season there will be a "lottery" for hunters in the Inverness Area. Sportsmen will apply to hunt and their names will be drawn for permits at random, up to a limited number. This way, the season will be spread out. Let us hope, for the deer's sake, that the sportsmen have good hunting.

Science News Letter, April 25, 1959

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